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IN THE UNITED STATES
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PROVISIONAL APPLICATION

INVENTOR(S) Tetsunosuke Fujisaki

CASE 1008-2

TITLE Synchronous and Asynchronous Collaboration Particularly Used With Project Management

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I hereby certify that this paper is being deposited with the United States Postal Service "Express Mail Post Office to Addressee" service under 37 C.F.R. §1.10 on the date indicated below and is addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231

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PROVISIONAL APPLICATION COVER SHEET

SIR:

This is a request to file a Provisional Application under 37 C.F.R. § 1.53(c). Enclosed herewith are the following:

Specification – 16 pages
8 sheets of informal drawings
Check in the amount of $160.00

Inventor Residence Information:

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Enclosed please find a check in the amount of $160.00 to cover the provisional application filing fee. In the event of non-payment or improper payment of a required fee, the Commissioner is authorized to charge or to credit **Deposit Account No. 50-0762** as required to correct the error. A duplicate copy of this letter is enclosed.

Please address all correspondence to: **Ryan, Mason & Lewis, LLP, 1300 Post Road, Suite 205, Fairfield, CT 06430.** Telephone calls should be made to the undersigned attorney at (203) 255-6560.

Respectfully submitted,

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SYNCHRONOUS AND ASYNCHRONOUS COLLABORATION PARTICULARLY USED WITH PROJECT MANAGEMENT

FIELD OF THE INVENTION

This invention relates to technologies and uses of a synchronous and asynchronous collaboration. More specifically, the invention relates to collaboration with project management systems.

BACKGROUND OF THE INVENTION

There are many independent efficiency and productivity tools on Internet for project execution. Prior art in asynchronous collaboration technology support teams in projects to establish common knowledge sources and to derive ideas and plans as a team. Prior art in synchronous collaboration technology support projects to eliminate the need for travel. Team personnel can have virtual meetings on Internet. Prior art in community and awareness technology support distributed project teams to maintain the same level of communications as if they are physically close.

For any businesses, to carry out project successfully in time within its budget is a primary concern. They care for quality, time, and cost. Many project management tools, such as Microsoft Project, have been developed to plan a project and to manage progresses. But they are limited within planning and monitoring capacities only. Many project management tools in prior art do not drive control efficiency and productivity tools for project execution. Much of the prior art fails to integrate planning tools and execution tools and therefore prevent companies from further improvement in project quality, time and cost. Analysis in project management tool relies on manual data gathering and entry on managing status of tasks, milestone achievements, progresses on reviews, etc.

ASPECTS OF THE INVENTION

An aspect of the invention is an improved collaboration system and method.

An aspect of the invention is an improved system and method for project management.

An aspect of the invention is an improved system and method for using asynchronous network collaboration system and its database for project management.

An aspect of the invention is an improved system and method for using synchronous network collaboration system for project management.

An aspect of the invention is an improved system and method for using community and awareness system for project management.

An aspect of the invention is an improved system and method for defining a project and its constituent tasks in terms of a directed graph in a database.

An aspect of the invention is an improved system and method for sharing project / task definitions and project team definitions among a project management system, an asynchronous collaboration system, a synchronous collaboration system, and a community & awareness system.

An aspect of the invention is an improved system and method for adding a network synchronous collaboration system incrementally on top of a network asynchronous collaboration system.

An aspect of the invention is an improved system and method for supporting asymmetric collaboration in a network synchronous collaboration.

An aspect of the invention is an improved business method for asynchronous network collaboration to create an project execution history for audit, documentation, and conflict resolution .

An aspect of the invention is an improved use of asynchronous network collaboration to track changes, splits, and aggregations of projects and/or sub projects.

An aspect of the invention is an improved business method for asynchronous network collaboration to create project histories used in project cost management and scheduling.

An aspect of the invention is an improved system and method for records from asynchronous network collaboration to merge into databases managed by asynchronous collaboration.

An aspect of the invention is an improved business method for synchronous network collaboration to monitor status and schedule of meetings for projects and/or sub projects.

SUMMARY OF THE INVENTION

The present invention is a new system and method for collaboration particularly used with project management and execution systems. In preferred embodiment, seamless switching from asynchronous collaboration to synchronous collaboration and vise versa is addressed.

A project is assumed to comprise many connected tasks. And each task is assumed to be an effort of document derivations, namely to derive output documents from given input

documents. In one preferred embodiment, a method to define projects in this language is introduced.

The new project model is mapped into an asynchronous collaboration database model. With this mapping, many important notions of project management such as task progress monitoring, milestones accomplishment monitoring, audit and reporting, project / task teams, etc. are implemented on network based distributed asynchronous collaboration system environment.

Meetings are very essential pieces in project execution. To integrate synchronous collaboration into a project management tool is essential as well because delays in setting up meetings often cause project delays.

A team carries out project execution. Project personnel works sometime individually for preparing contributions to the project but frequently they work together with other personnel producing contributions as results of meeting discussions.

In preferred embodiments, an asynchronous collaboration database model suitable for capturing contributions by individuals is further enhanced with a synchronous collaboration component. This component enables multiples of individuals on-line to discuss and to exchange thoughts on shared documents and contributions.

In preferred embodiments, that whatever changes on documents made in this synchronous collaboration session are captured and are merged together with the contribution database owned by the asynchronous collaboration database model. Thus, document enhancement can be made by individual accesses to the database by team members and can be made as results of group meetings by multiple of team members.

In preferred embodiments, smooth transition between an individual access and a group access is supported. Operations support this transition include the following: join a meeting, leave from a meeting, invite to a meeting, shutdown a meeting for future restart, restart a meeting, and search a meeting by particular individuals.

In preferred embodiments, the combined unified contributions are made available for audit and for integration into derivatives to next task.

In preferred embodiments, an asynchronous collaboration database model suitable for individual contribution creation is further enhanced to support community and awareness services supporting distributed project teams.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1, comprising Figure 1A, Figure 1B, Figure 1C, and Figure 1D. Figure 1A shows a project definition network model being assumed in this disclosure. Figure 1B through Figure 1D are examples of using the present innovation.

Figure 2 is block diagram of one preferred embodiment of a project management system with an collaboration and community system components.

Figure 3 is a diagram showing the relationship between project definition network and asynchronous collaboration.

Figure 4 is a diagram showing synchronous collaboration aspect of the system supporting project personnel to have real-time collaboration sessions.

Figure 5 is a flow chart showing transitions between asynchronous and synchronous collaboration modes in support of project execution and the relationship to general project management tools.

Figure 6 is a diagram showing how a task completes and how the task completions affect to project execution and general project management tools.

Figure 7 is a flow chart showing the steps of a task completion process.

Figure 8 shows one view of documents and contributions in asynchronous and synchronous collaboration viewer.

DETAILED DESCRIPTION OF THE INVENTION

In Figure 1A, the project definition model of the present system is shown as **100**. A project is assumed as an activity to generate output document **1014** from various input documents **1011**. In the process of changing input documents to an output document, a project can produce a number of intermediate documents **1012**. This relationship defines the project **1020** as a network as shown in Figure 1A. Such network is called project definition network and should be defined by a project manager of a project. Project definition networks **1020** are well known.

A project has its project manager and other properties as shown in a project property list **120**. The project property list **120** includes one or more of the following:

- project ID
- project manager ID
- one or more links to constituent task definitions

As real world projects have many sub-tasks, a project definition network further comprises of multiple of task definitions. A task **1010, 1010A** is defined as a process to derive an output document **1014** or an intermediate document **1012** from one or more input documents **1011** or intermediate documents **1012**. Figure 1A also shows the relationship between a project and its constituent tasks.

In Figure 1A, circles **1011, 1012, 1014** representing existing or non-existing documents refer to an external document database **2000**. Any document system can be used as **2000**. For non-existing documents, placeholders **2002** will be stored in **2000**. A task is active when all input documents exist and the output documents have not yet been generated. When a task is active, the task manager is responsible for generating an output document and to replace the placeholder **2002** in the external document database **2000** with a real document. When the output document **1012** of the task **1010** is generated and stored in the document source database **2000**, the succeeding task **1010A** will become active.

A task is defined in **1010** with one of more of the following: a task id, a task manager id, one or more of input document references, one or more of output document references, an optional access list, an addendum database reference, an optional target completion date, and one or more of optional reviewer ids.

- **Task id** is the name of the task.
- **Task manger id** designates the person in charge to execute and to complete this task.
- **Input document references** are references to documents used in this task execution. A task becomes active when all input documents exist.
- **Output document destination** is a reference to a placeholder document or an existing document. After the task completes, this should refer to an existing document.
- **Access list** (optional) designates additional workers who will share responsibility with the task manager for completing this task. The task manager and the projection manager can add names of persons to participate in the execution of this task. The task manager, the project manager and the workers in this list form a team. The people in the team are called task personnel hereinafter.
- **Addendum database** is a storage queue of events given by community personnel during the execution of the task. Events comprise change requests, comments, new ideas, overlays / modification on the input document, community / awareness events, and others. It is task manager's responsibility to generate output documents reflecting all comments, change requests, and others accumulated in the addendum database. Addendum database is persistent. It records all events happened during the task execution. The record includes the details of the event such as who caused the event, the timestamp, and other information. This supports to back to any point of project execution later and to find out who did what at when.
- **Target completion date** (optional) is an estimated date and time when the task will complete. It is monitored by the system. Existence of this supports alerts and warning reports to managers to keep the task in pace.

- **Reviewer ID** (optional) launches automatic approval process by designated reviewers when a task manager claims that the task will finish.

Figure 1B shows the use of this project definition model in a non-limiting example of manufacturing. Starting from documents representing constituent basic parts **131**, documents for intermediate parts **132** are generated. And then the document for the final product **133** is generated. Each arc connecting circles are tasks.

Figure 1C shows the use of this project definition model in a non-limiting example of publishing. Starting from a specification document **141**, drafts **142, 143** are generated. And then the final print **144** is generated.

Figure 1D shows the use of this project definition model in a non-limiting example of education and presentation development. Starting from materials covering a small subject area **151**, intermediate documents for larger portions **152** are generated. And then the whole course material **153** is generated. Instructor uses it for further delivery to obtain an course report **154**.

Novel collaboration functions **190** are used by systems **100, 100A, 100B**, and **100C**. These collaboration functions are described in detail below.

Figure 2 shows the entire view of preferred embodiment of the system. The system works in combination with a server **1000**, document source databases **2000**, optional supplemental project management system **3000**, client systems like PCs **4100, 4101, 4102, 4103**, client software **4200** which runs on systems **4100~4103**, and a network **5000**. The network **5000** could be any well-known network including Internet. Task personnel using the client system **4100~4103** access to the server **1000** via the network **5000**.
The server **1000** accommodates multiple instances of project **1020**. The project **1020** will have a persistent life in the server **1000**. Namely they stay in the server **1000** or in related support systems until deleted. The project **1020** comprises a project property list **120** and multiple instances of tasks **1010**. To define a project **1020**, the manager of the project defines the project definition network **1020~1020C** and the project properties list **120**. Some tasks **1010** are active and some are inactive. An active task **1010** comprises multiple of input document references **1011** and multiple output document destinations **1012**. The task **1010** further includes a task property list **110** and an addendum database **1013**.

The access list in **110** defines the task team **4300** comprises the one or more task personnel. Task personnel and the task manager will access to the system using the client software **4200**.

The system uses a novel asynchronous collaboration system **1015**, a novel synchronous collaboration system **1016**, and a community and awareness service system **1017**. A task team **4300** can be different on each task. In Figure 2 for instance, the task team **4300** for

1010 comprises only of 4100, 4101, and 4102 is defined in the access list in of the task property 110.

Via the asynchronous collaboration system 1015 in the collaboration system 190, task personnel can see up-to-date task documents as the combination of the original input document 1011 and the addendum database 1013. Task personnel can also contribute to 1013. Task personnel can backtrack and replay any portion of task execution in 1010.

The synchronous collaboration system 1016 in the collaboration system 190 allows two or more task personnel to perform a collaboration session, e.g., 1016 expands the functions of the asynchronous system 1015 with the sound board 2400 in it. With this addition of the sound board 2400, actions made by one task personnel become visible from other task personnel in real-time. Because the synchronous collaboration system 1016 is an incremental addition to the asynchronous collaboration system 1015, the present innovation allows a novel switch between asynchronous and synchronous modes of collaborations and back again. This will be discussed later.

The community and awareness support system 1017 in the collaboration system 190 has links to the asynchronous collaboration system 1015 and the synchronous collaboration system 1016. It monitors all events in 1015 and 1016 and notifies them to task personnel. The community service and awareness service uses the access list in the task property 110. This allows each task in a project to have different community.

Figure 3 shows the view of the present invention from the perspective of asynchronous collaboration over the network. This supports the task personnel and the reviewers to access to up-to-date documents. At any point, the document is made up with the base document 2001 via the input document reference 1011 and the contributions kept in the task addendum database 1013. The task addendum database 1013 contains all mark-ups and change requests made so far made by the task personnel. By overlaying the base document with the contributions, people can see the up-to-date status of the document. Figure 8 shows one example of a combined view by a client software 4200 of a base document 2001 overlaid by contributions accumulated in the addendum database 1013. In Figure 8, scribbles and pasted texts come from 1013 and the background drawing comes from 2001.

The active client agent 2102 will be set up for all active task personnel. The active client agent 2102 accesses to the input document in the document database 2001 via 1011 and also to addendum database 1013. And it delivers both to the client software 4200 on the PC 4103 of the requesting task personnel. Information from the addendum database 1013 contains not only data but also commands for the client software 4200 to support replay of event sequences made by other personnel up to the point. All records in the addendum database 1013 are time stamped. The active agent 2102 transforms the output in XML format. The XML output will be delivered from 2102 to the client 4200 via two filters 2106 and 2108. The role & right filter 2106 verifies the access right of the task personnel for the information to be delivered. The presentation filter 2108 transforms the information into

appropriate presentation in respect to the role, access right, the PC environment, the network environment and others. Knowing the restrictions of the devices, communication channels, and user's setting, the presentation filter **2108** transforms the XML to optimize transmission speed. The presentation filter **2108** also keeps track of cached image files in client machines. This is to minimize image transmission possible. For replay request, this **2108** will take role of pace making.

The present patent provides asymmetric assignment of roles among task personnel. Some people can do everything but some other are limited to a few of actions. Role & right filter **2106** examines each actions, data from / to the action agent in terms of roles and capabilities. For instance, a participant with low privilege can read but cannot make contributions. **2106** blocks the data flow from the participant to the addendum database **1013**. In asynchronous collaboration mode, the client can make contributions add data, change requests, comments into 1013 via the path 4200 → 4130 → 2108 → 2106 → 2102 → 1013. The active client agent **2102** reports access information and activity reports to 3000 when needed.

Figure 4 shows the view of the present invention from the perspective of synchronous collaboration over the network **5000**. This supports to conduct a virtual meeting among team personnel in context of the present task.

Asynchronous collaboration is realized as an incremental addition to the asynchronous collaboration system. When synchronous collaboration is enabled, a soundboard **2400** will be added to **1010**. The soundboard **2400** intercepts all traffics from the role & right filter **2106** to **2102** and broadcast them to all active client agents **2102**. Thus, all the task personnel in synchronous session will share changes on documents by sharing addendum additions in real time. The sound board **2400** also notifies, when needed, all meeting session activity events such that the supplemental project management system **3000** can keep log of occurred meetings in a context of the project.

Figure 5 is a flow chart showing the flow of the session control **500** used in the collaboration system **190**. This enables the on-the-fly transition between an asynchronous collaboration session **540**, and a synchronous collaboration session **565**.

From "No session" status **505**, task personnel can reach an asynchronous session via two routes (a:) ***"start a new project"*** allows him/her to initiate a project in asynchronously as a manager of the project **505 → 507 →510 → 530.** (b:) ***"look for a project"*** allows him/her to looked for a saved project. If the saved project was in asynchronous mode, the he/she will be led to an asynchronous session. **505 → 515 → 525 → 530.** Task personnel can reach a synchronous session via three routes (c:) ***"start a new project"*** also allow task personnel to initiate a project with somebody in a synchronous collaboration session. **505 → 507 → 511→535→ 550 → 560 → 565.** (d:) ***"look for a project"*** allows him/her to looked for a saved project. If the saved project was in synchronous mode, the he/she will back to a synchronous session. **505/→ 515→ 525→ 535→ 550→ 560→565.**

Transition from asynchronous to synchronous occurs when somebody invites another to an active session. (Inviter) **540** → **550** → **560** → **565**. (Invitee: case 1) **505** → **520** → **535** → **550** → **560** → **565**. (Invitee: case 2) **540** → **550** → **560** → **565**.

In one preferred embodiment, when a task personnel goes into a synchronous session, he/she will always go through an asynchronous session **540** or asynchronous session sign-in process **535**. This affects to catch-up all up-to-date document information. Once document catch up finishes, the status moves into a synchronous session **565**.
From a synchronous collaboration session **565**, a task personnel can back to asynchronous collaboration session via: **565** →**575** → **540** or can go back to no session status via; **565** → **570** → **545** → **505**.
Thus the components necessary for synchronous collaboration mechanism are blended with components for asynchronous collaboration.

The two dotted lines **560** to the supplemental project management system **3000** and **570** to **3000** show optional meeting report to the supplemental project management system **3000**. The system can provide **3000** the information regarding when a meeting started and when a meeting ended.

Figure 6 shows how succeeding task will be made active when preceeding task completes. When the task manager of the task **1010A** thinks the output document **1012A** of **1010A** is complete and that he is ready to complete the task, he can issue "COMMIT OUTPUT DOCUMENT" command to initiate the task completion process which is shown in Figure 7. Then the reviewers **4100** will be notified and be asked for the document review. When all reviewers approve, the approval will change the status of the output document **1012A**. **1012A** will be copied to **1012B** - the input document for task **1010B**.

Figure 7 is a flow chart showing the flow of the task completion process. In one preferred embodiment, with this process, the system will automatically ask reviewers **4100**s (in Figure 6) specified in the task property **110** to review the committed output document **1012A**.(In Figure 6) When all reviewers approve it **720**, the output document **1012A** will be stored into the document source database **2000** and the task **1010A** concludes. **1012B** will be copied from **1012A**. After this, task **1010B** will be set "ready to start". The event of **1010A** completion will be sent to the supplemental project management system **3000**.

CLAIMS

I claim:

1. A network collaboration system, comprising:

   one or more task addendum databases;

   one or more input documents;

   one or more network connections that provide contributions to the input documents from one or more clients connected to the network, the contributions combined with the respective input documents to create one or more output documents that are stored in the task addendum database; and

   a collaboration process that permits one or more clients to switch between a synchronous and an asynchronous collaboration session.

2. A system, as in claim 1, where the switching occurs when one of the clients in an asynchronous collaboration session invites one or more new clients to a synchronous collaboration session.

3. A system, as in claim 1, where the switching occurs when two or more of the clients coordinate to start a synchronous collaboration.

4. A system, as in claim 1, where one or more of the clients resume a suspended synchronous collaboration.

5. A system, as in claim 1, where the switching occurs when all agree to leave the session or to switch the session to asynchronous. The session continues as an asynchronous sessions by those who decided to stay.

6. A network collaboration process comprising the steps of:

   providing contributions to one or more input documents from one or more clients connected to the network;

   combining the contributions with the respective input documents to create one or more output documents;

   storing the contributions in the task addendum database;

permitting one or more of the clients to switch between a synchronous and an asynchronous collaboration session.

7. A network collaboration system comprising:

means for providing contributions to one or more input documents from one or more clients connected to the network;

means for combining the contributions with the respective input documents to create one or more interim documents and one or more output documents;

means for delivering the combined output to one or more clients connected to the network.

means for permitting one or more of the clients to provide contributions and to access to the combined output from the system in either of a synchronous and an asynchronous collaboration session.

means for permitting one or more of the clients in a synchronous collaboration session to make their contribution in real-time collaboration.

means for permitting one or more of the clients to switch between a synchronous and an asynchronous collaboration session.

8. A network project management collaboration computer system comprising:

one or more network connections to one or more networks;

one or more project management systems, the project management system having

one or more projects, each project having one or more tasks, each task having one or more of the following task attributes:

a task id;
a task manager id;
a task initial input;
a task addendum database; and
a task output file destination;

one or more collaboration systems, the collaboration system permitting one or more task personnel to provide contributions to the task addendum database so that the task personnel can use the contributions to modify the task initial input documents to create a task output document that is stored in place where the task output file destination

specifies, the collaboration system further permitting one or more task personnel can see and change one or more documents and contributions during a collaboration session.

9. A system, as in claim 8, where the task documents are in any one of the following forms: 1-dimensional data, 2-dimensional data, 3-dimensional data, 4-dimensional animation, an audio recording, a printable document, a 3D representation of objects, and movies / a video recording.

10. A system, as in claim 8, where the contributions comprise one or more of the following: a comment, a change request, an incremental modification of a document.

11. A system as in claim 8, where the contribution is stored to the task addendum database with one or more of the following: a timestamp, an identity of the task personnel made this contribution, and a pointer designating the part of the task document where this contribution is applied.

12. A system, as in claim 8, where the contributions are in form of one or more of the following: a text, a pen annotation, a voice, a video, a image, a data model, and animation, and any one or more sources of media and representations.

13. A system, as in claim 8, where the task further comprises one or more access lists of task personnel whereby only the task personnel listed on the access list are permitted to participate in execution of the task.

14. A system, as in claim 13, where each of the task personnel on the access list has a role and capability definition.

15. A system, as in claim 14, where the task manager defines the role and capability definition.

16. A system, as in claim 15, where the role and capability definition for task personnel can be delegated from the task manager to other task personnel.

17. A system, as in claim 16, where the community and awareness services are associated to the access list so that each task in a project have different community.

18. A system, as in claim 8, where each of the task personnel can provide only contributions associated with the respective role and capability definition.

19. A system, as in claim 18, where each of the task personnel can only access to task documents associated with the respective role and capability definition.

20. A system, as in claim 19, where each of the task personnel are informed of task related events only to those associated with the respective role and capability definition.

21. A system, as in claim 8, where the task further comprises one or more task completion requirements.

22. A system, as in claim 21, where the task completion requirements include any one or more of the following: a time by when the task should complete, an amount of resources can be used by completion, an output documents to be delivered for completion, one or more names of reviewers who should approve the outputs.

23. A system, as in claim 22, where the completion requirements are compared to completion criteria in a comparison.

24. A system, as in claim 23, where the success of the comparison initiate the subsequent task that follows in precedence the task with the task approval.

25. A system, as in claim 24, where the comparison is reported to one or more project management systems.

26. A system, as in claim 25, where the approval by one or more of the reviewers is one of conditions to satisfy the completion criteria.

27. A system, as in claim 8, where the collaboration system is an asynchronous collaboration system.

28. A system, as in claim 27 where the asynchronous collaboration system includes any one or more of the following: a discussion database, a document version control system, a document viewer system, an Internet browser, a video player.

29. A system, as in claim 28, where the asynchronous collaboration system maintains task documents as a combination of the task document and contributions stored in the addendum database.

30. A system, as in claim 8, one or more task personnel has one or more viewers for viewing task documents via the network.

31. A system, as in claim 30, where the viewer creates a single view of task documents.

32. A system, as in claim 31, where the viewer can create different views in respect to task personnel's roles and capabilities.

33. A system, as in claim 32, where the viewer allow task personnel to make contributions by referring the task document view.

34. A system, as in claim 8, where the collaboration system is a synchronous collaboration system.

35. A system, as in claim 34, where the synchronous collaboration system includes any one or more of the following: a document sharing system, a teleconferencing system, a chat room system, a video conferencing system, an application sharing system, an Internet browser sharing system.

36. A system, as in claim 35, where the synchronous collaboration system is realized by adding incremental components e.g. the sound board 2400 to the asynchronous collaboration system.

37. A system, as in claim 36, where the incremental components intercept contribution events from the task personnel and broadcast and delivered to the task document viewers of other task personnel.

38. A system, as in claim 37, where the broadcasting of contributions will be filtered by each task personnel's roles, capabilities, and access status.

39. A system, as in claim 38, where any unsuccessful delivery will be marked in records of addendum database with identity of task personnel.

40. A system, as in claim 39, where any unsuccessful delivery records in addendum database with identity of task personnel so that recovery of delivery is possible when connection is established.

41. A system, as in claim 40, where any unsuccessful delivery records in addendum database with identity of task personnel so that who received and who has not received is decidable.

42. A system, as in claim 8, where the project management system modifies one or more of the projects with a project modification.

43. A system, as in claim 42, where the project modification includes any one or more of the following: a task deletion, a task addition, a task insertion, a task resource change, a task completion change, a task split, and a task merge.

44. A system, as in claim 43, where the collaboration system modifies one or more task attributes associated with the project change with a task attribute modification.

45. A system, as in claim 44, where the task attribute modification includes any one or more of the following: a task attribute addition, a task attribute deletion, and a task attribute change.

46. A system, as in claim 8, where one or more of the tasks is a merge task that merges the task outputs of two or more of the tasks of the project.

47. A system, as in claim 8, further comprising a catch-up process that stores the task initial input and one or more of the comments so that task personnel can access a record of all comments made to the task initial input.

48. A system, as in claim 8, where the task initial input and one or more of the comments are merged by the collaboration system into a presentation presented on a viewer.

49. A system, as in claim 8, where the project includes any one or more of the following: a design project, a construction project, a manufacturing project, an engineering design project, an architectural design project, an painting project, an automotive design project, an electrical circuit design project , a publishing project, a presentation development and review project, a presentation delivery, a course material design project, a course delivery, a medical document development and review project, a technical document development and review project, a software development and review project, any sort of document development and review project, a picture modification and review project, a video modification and a review.

50. A system, as in claim 8, where the projects are stored in the server and can be archived and searched.

51. A system, as in claim 49, where the search project can resume the collaboration session in the same context as was terminated.

52. A system, as in claim 51, where one or more of the task personnel is invited to the resumed session.

53. A system, as in claim 52, where the projects can be searched from time, participants, subjects, project name, task names, input documents, output documents, manager names, and others.

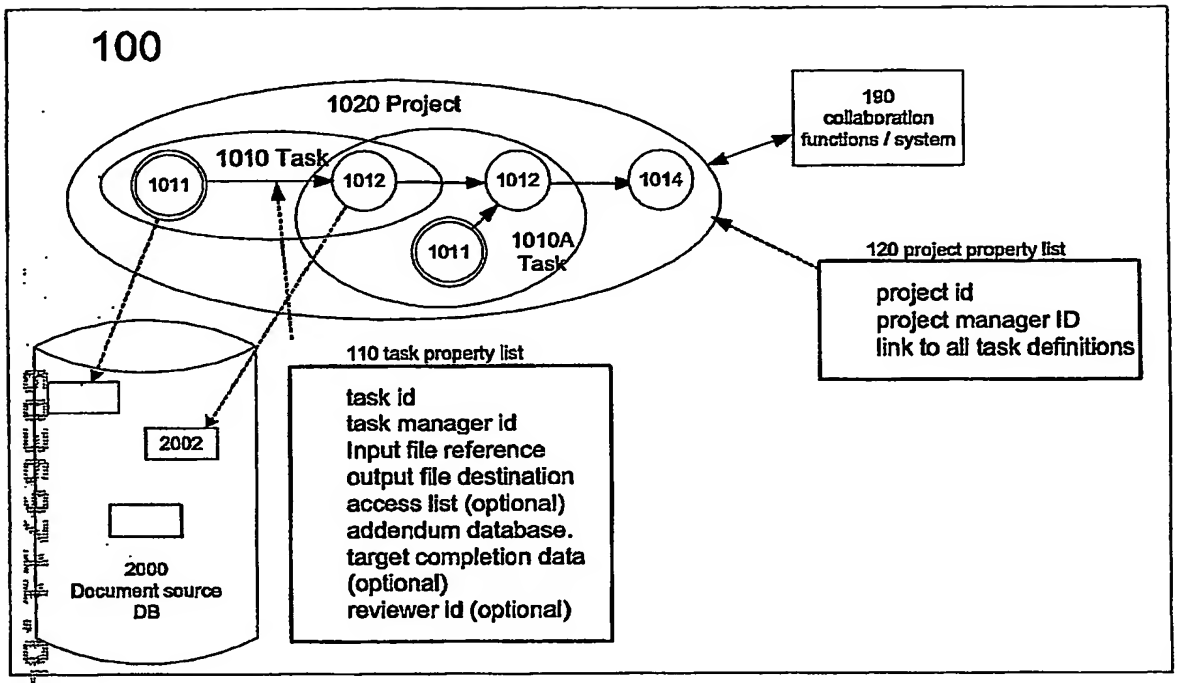
SYNCHRONOUS AND ASYNCHRONOUS COLLABORATION PARTICULARLY USED WITH PROJECT MANAGEMENT

ABSTRACT

The new project model is mapped into an asynchronous collaboration database model. With this mapping, many important notions of project management such as task progress monitoring, milestones accomplishment monitoring, audit and reporting, project / task teams, etc. are implemented on network based distributed asynchronous collaboration system environment.

Adobe PDF

Figure 1A



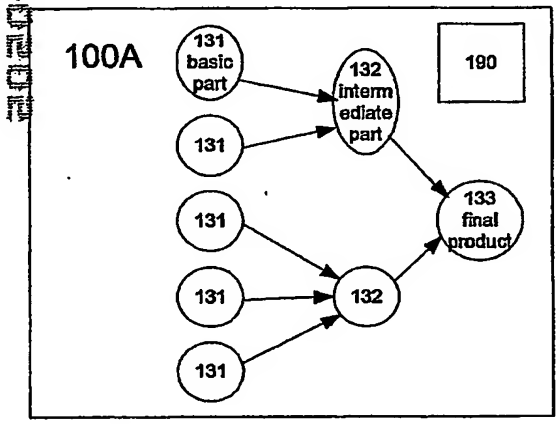


Figure 1B

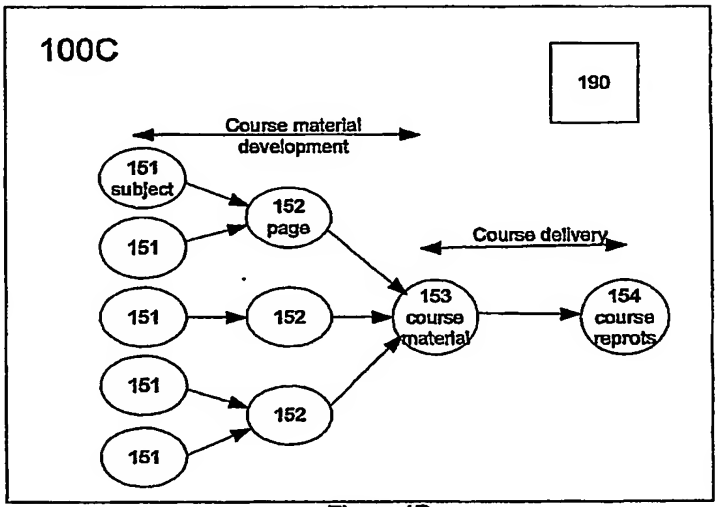


Figure 1D

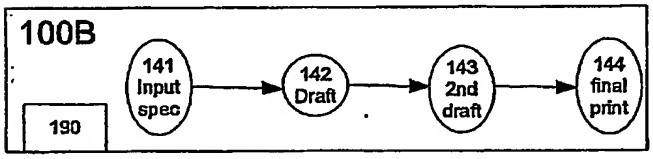


Figure 1C

Figure 2

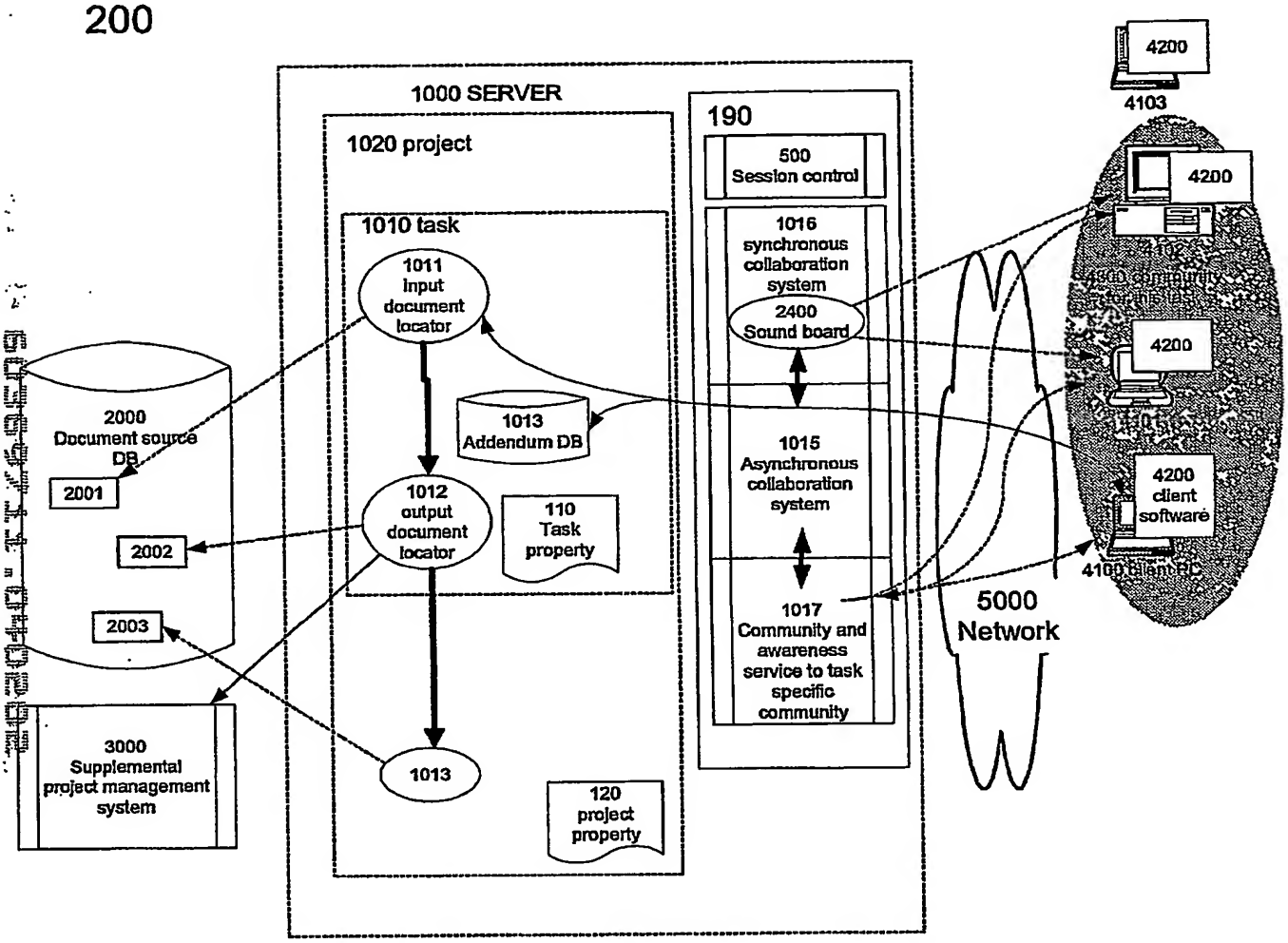
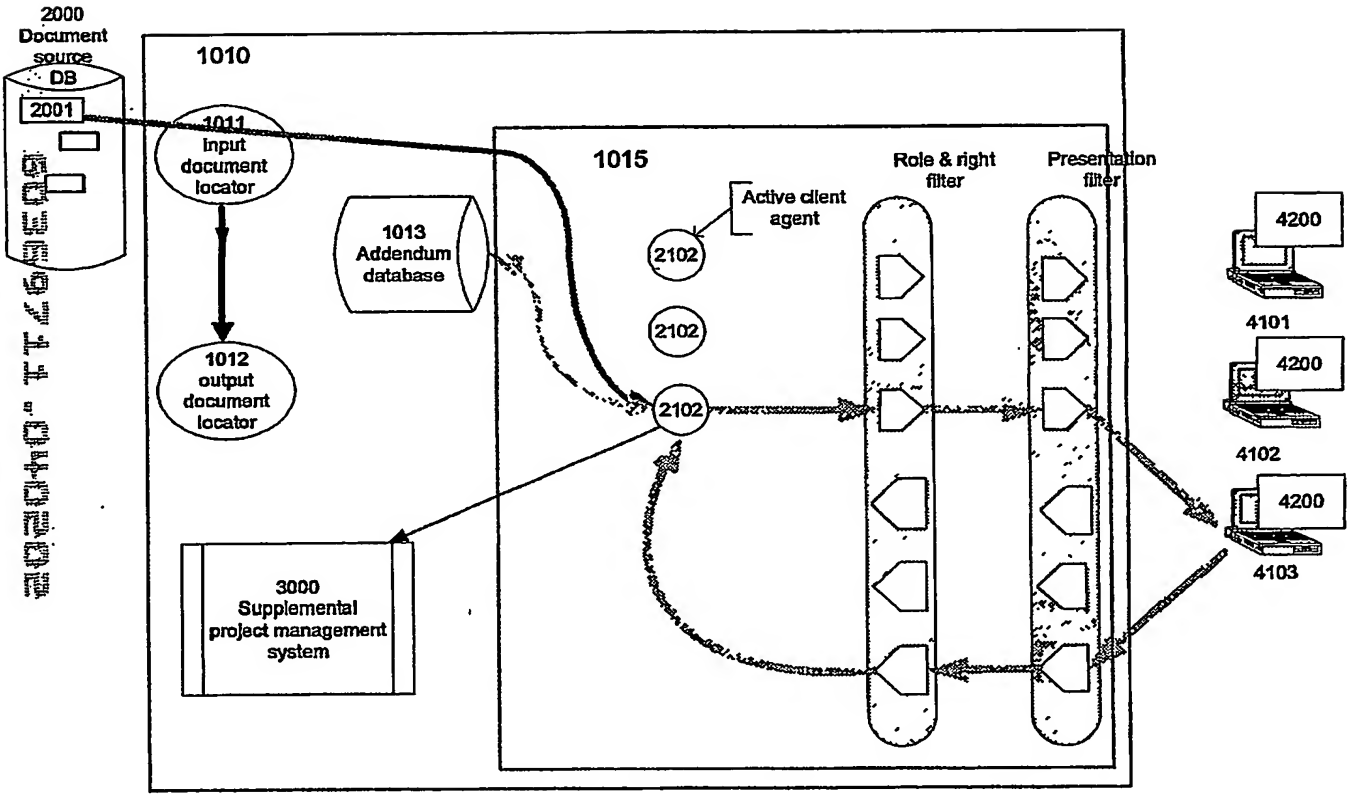

200
1000 SERVER
1020 project
1010 task
1011 Input document locator
1012 output document locator
1013 Addendum DB
110 Task property
1013
120 project property
190
500 Session control
1016 synchronous collaboration system
2400 Sound board
1015 Asynchronous collaboration system
1017 Community and awareness service to task specific community
2000 Document source DB
2001
2002
2003
3000 Supplemental project management system
4200
4103
4200
4200
4200 client software
4100 Client PC
5000 Network

Figure 3

300


2000
Document source DB
2001
1010
1011
Input document locator
1012
output document locator
1013
Addendum database
1015
Active client agent
2102
2102
2102
Role & right filter
Presentation filter
4200
4101
4200
4102
4200
4103
3000
Supplemental project management system

400

Figure 4

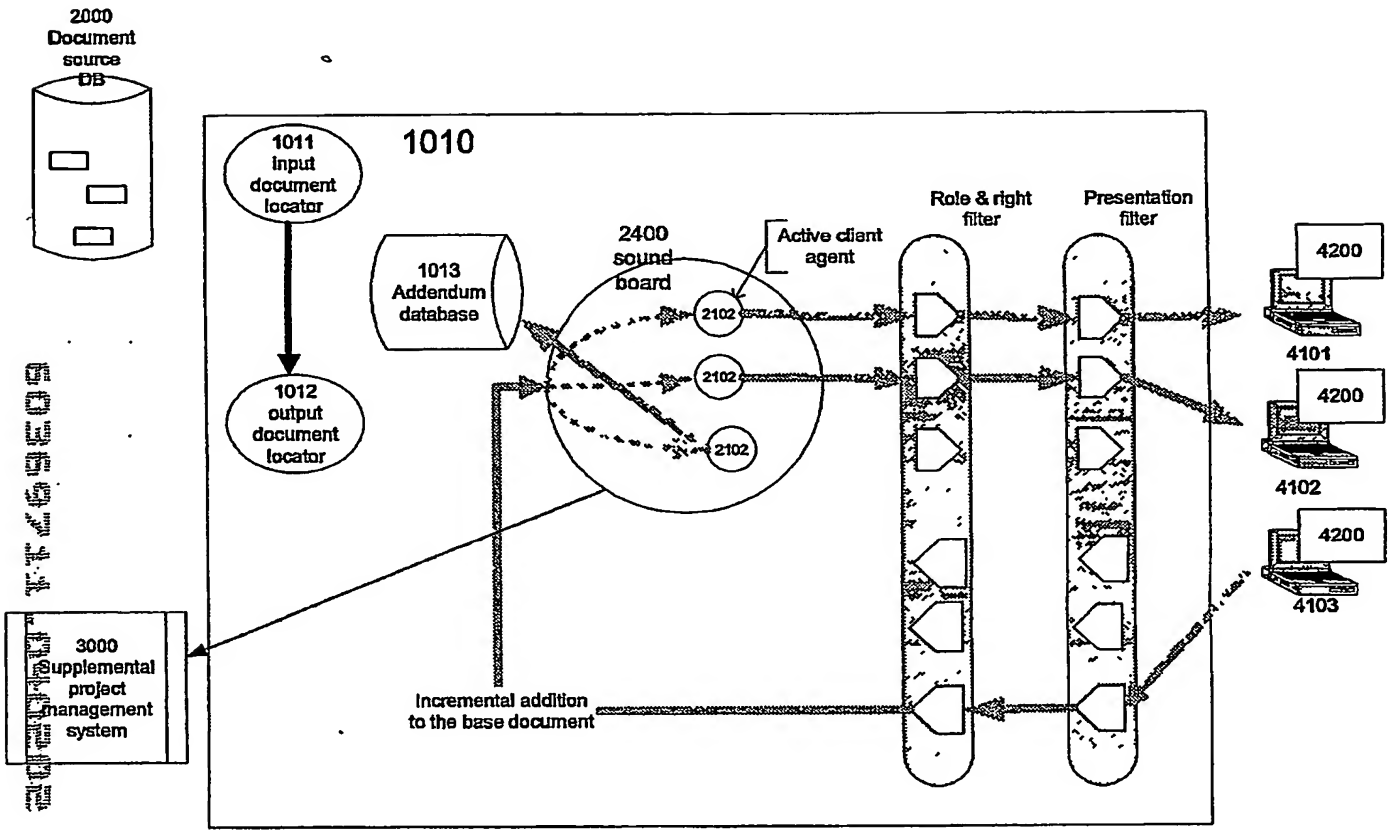

2000
Document
source
DB
1010
1011
Input
document
locator
1012
output
document
locator
1013
Addendum
database
2400
sound
board
2102
2102
2102
Active client
agent
Role & right
filter
Presentation
filter
4200
4101
4200
4102
4200
4103
3000
Supplemental
project
management
system
Incremental addition
to the base document

Figure 5 500

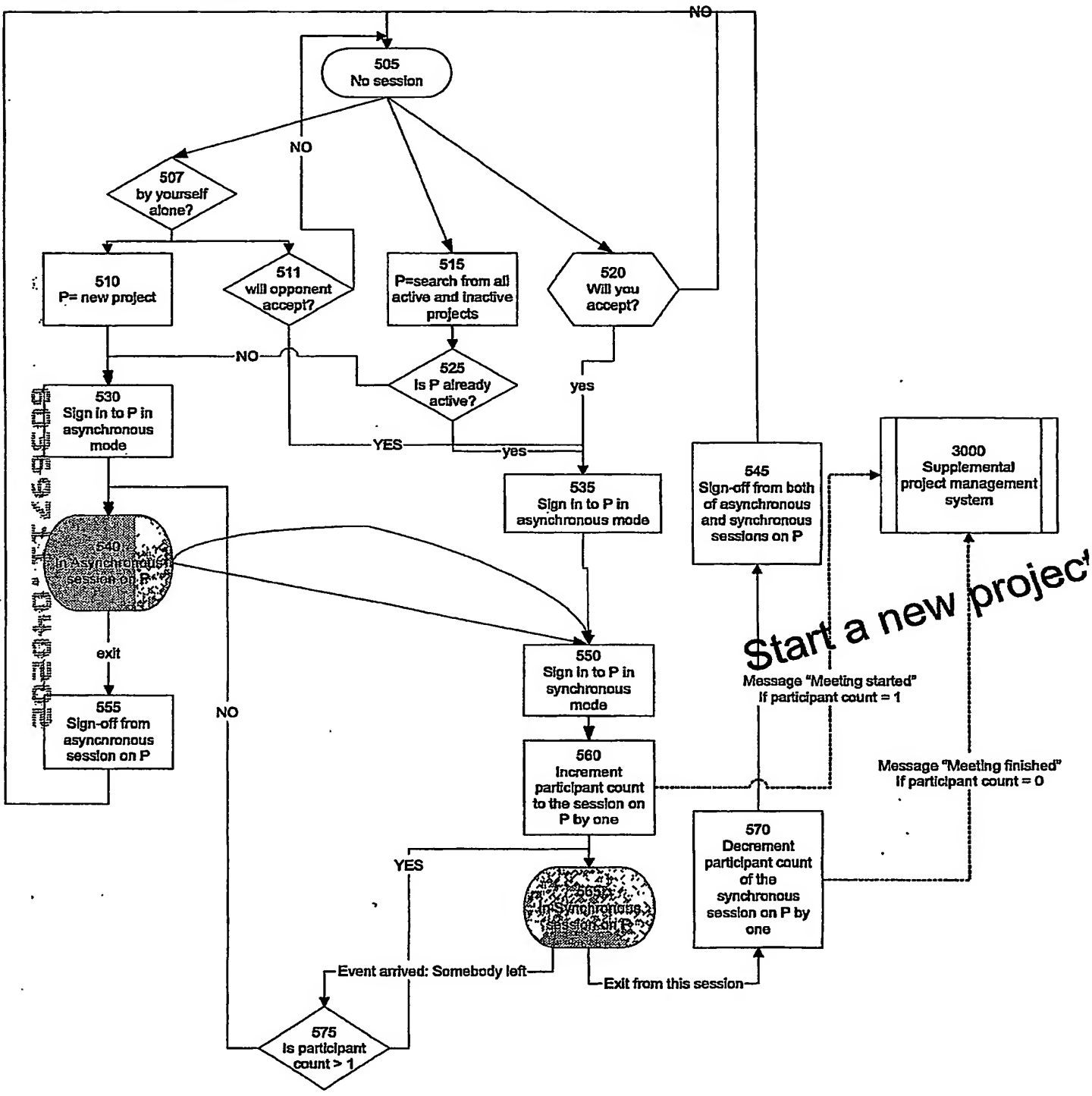

505
No session
507
by yourself alone?
510
P= new project
511
will opponent accept?
515
P=search from all active and inactive projects
520
Will you accept?
525
Is P already active?
530
Sign in to P in asynchronous mode
535
Sign in to P in asynchronous mode
540
In Asynchronous session on P
545
Sign-off from both of asynchronous and synchronous sessions on P
550
Sign in to P in synchronous mode
555
Sign-off from asynchronous session on P
560
Increment participant count to the session on P by one
565
In Synchronous session on P
570
Decrement participant count of the synchronous session on P by one
575
Is participant count > 1
3000
Supplemental project management system
NO
YES
yes
exit
Event arrived: Somebody left
Exit from this session
Message "Meeting started" If participant count = 1
Message "Meeting finished" If participant count = 0
Start a new projec

Figure 6

600

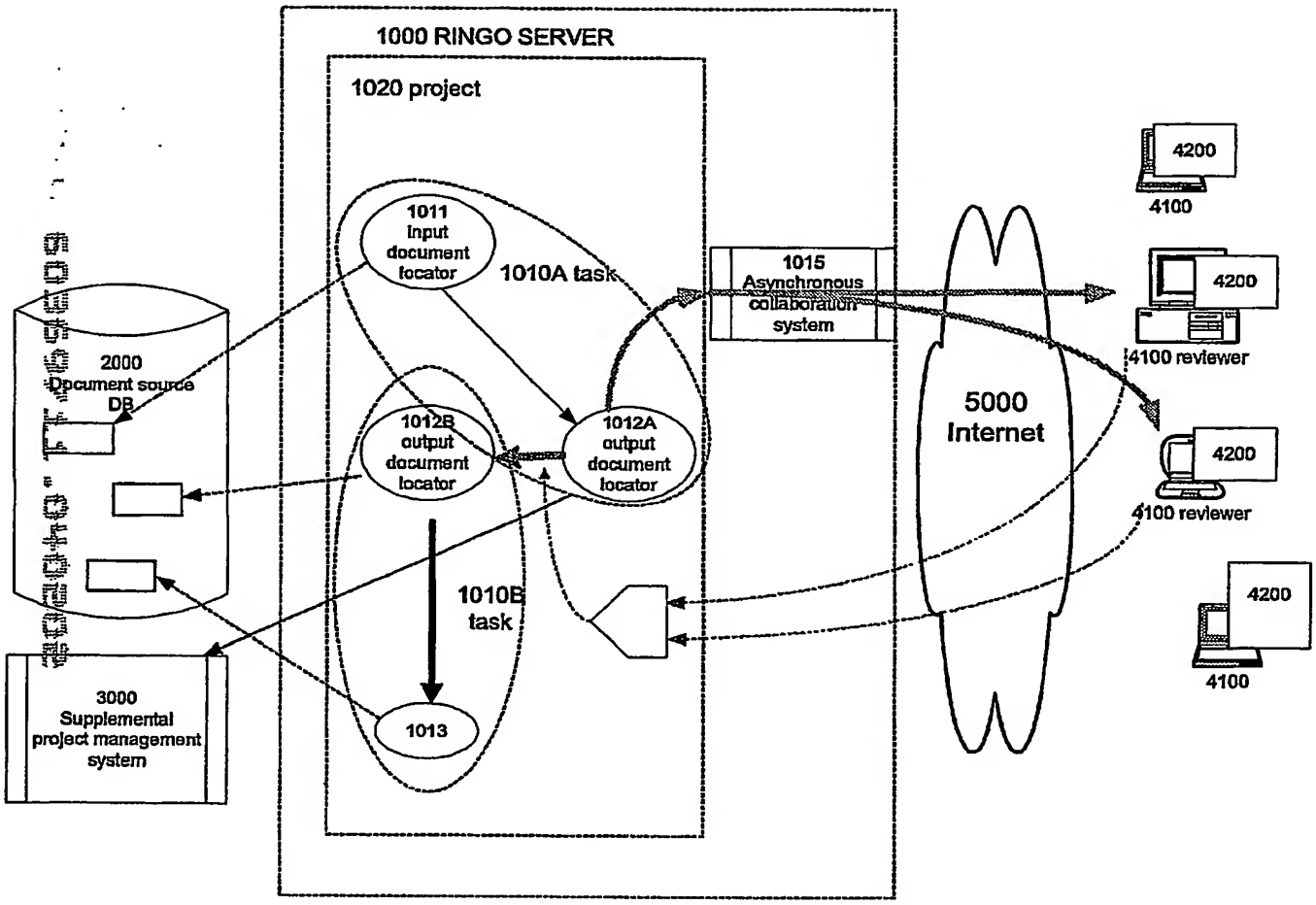

1000 RINGO SERVER
1020 project
1011 Input document locator
1010A task
1012B output document locator
1012A output document locator
1010B task
1013
1015 Asynchronous collaboration system
2000 Document source DB
3000 Supplemental project management system
5000 Internet
4200
4100
4200
4100 reviewer
4200
4100 reviewer
4200
4100

Figure 7

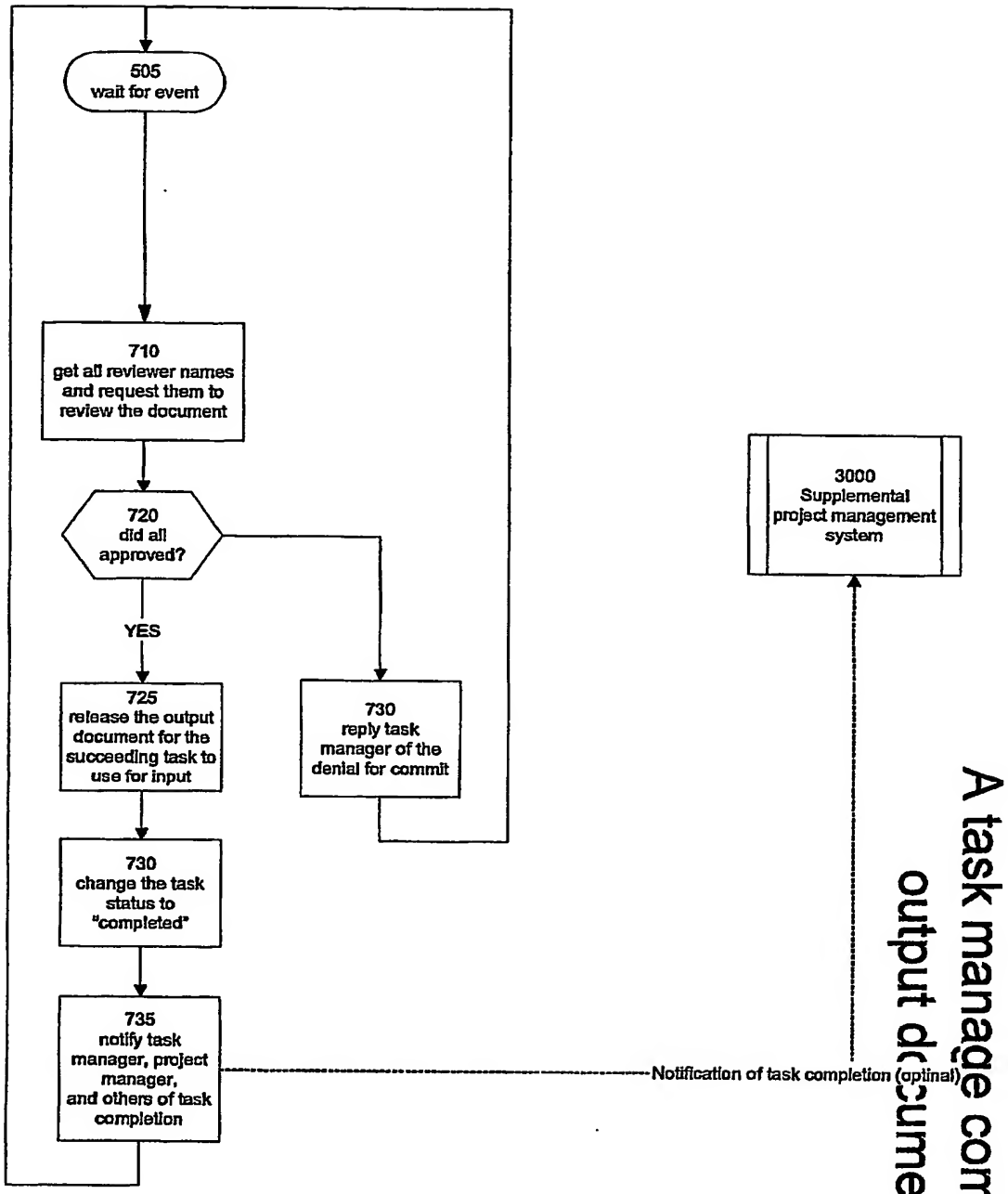
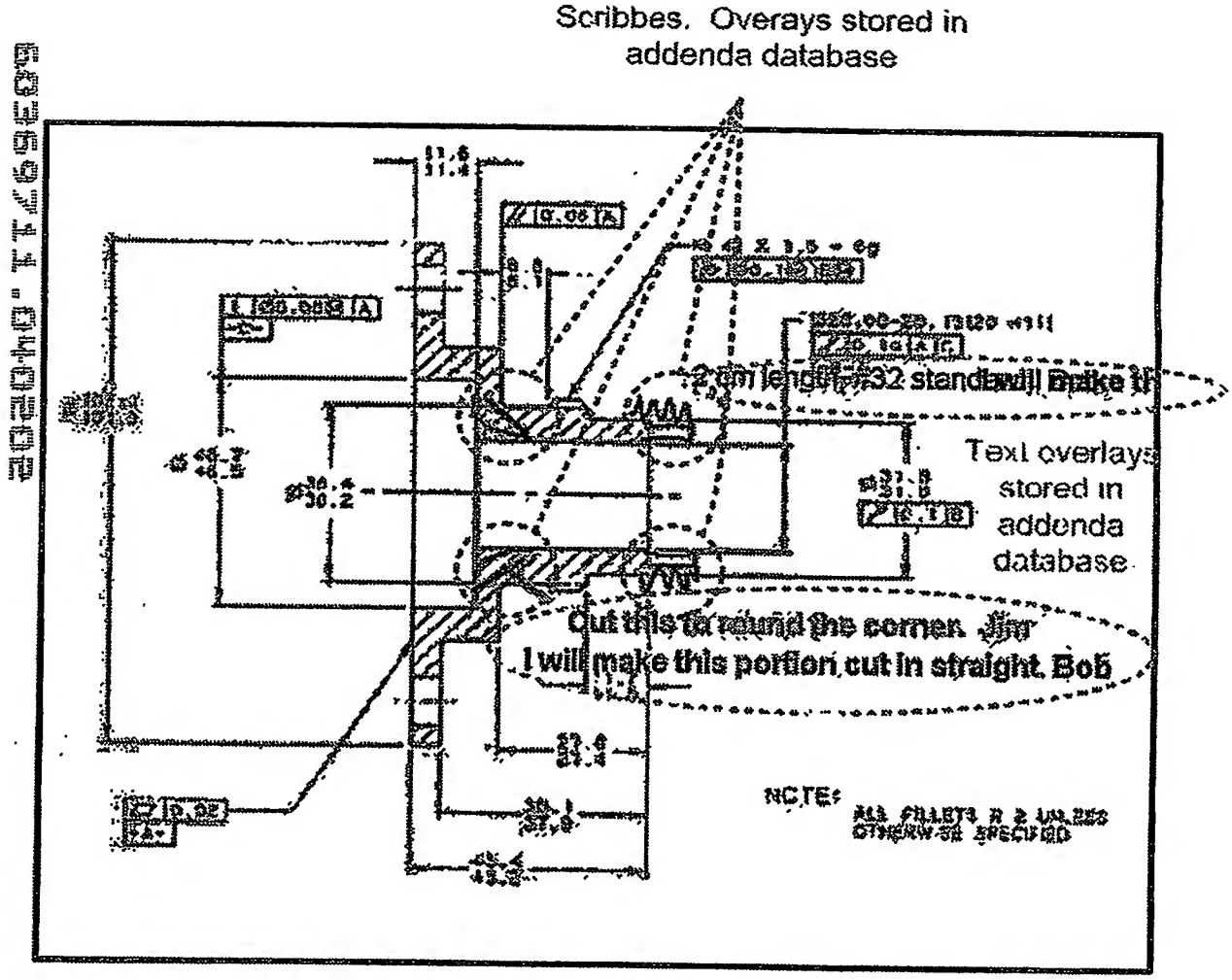

500A
505
wait for event
710
get all reviewer names and request them to review the document
720
did all approved?
YES
725
release the output document for the succeeding task to use for input
730
reply task manager of the denial for commit
730
change the task status to "completed"
735
notify task manager, project manager, and others of task completion
Notification of task completion (optinal)
3000
Supplemental project management system
A task manage commit an output document

Figure 8


Scribbes. Overays stored in addenda database
2 cm length 7/32 standard will make th
Text overlays stored in addenda database
Cut this to round the corner. Jim
I will make this portion cut in straight. Bob
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